



BREEAM INTERNATIONAL NEW CONSTRUCTION

PRODUCT DATA FOR CERTIFICATION

URBANSCAPE GREEN ROOF SYSTEMS

BREEAM (Building Research Establishment Environmental Assessment Methodology) International New Construction¹ is a voluntary standard that defines high performance green buildings which are healthier, more environmentally responsible and more profitable structures. Using independent assessors, BREEAM examines criteria covering a range of issues in sections that evaluate: management processes, health and wellbeing, energy, transport, water, materials, waste, land use and ecology, pollution and innovation.

KNAUF INSULATION products as **URBANSCAPE GREEN ROOF SYSTEMS** can put you on the right track to get the highest result for BREEAM certification.

BREEAM Credit Category code	Assessment criteria and definition	Urbanscape Green roof systems contribution	Contributes towards
Hea 03 (Thermal comfort) 	To ensure through design that appropriate thermal comfort levels are achieved and controls are selected to maintain a thermally comfortable environment.	Thermal modelling with full dynamic thermal analysis is facilitated through Building Information Modelling (BIM) available files ² on line. Green roof is a design alternative for thermal comfort strategy. Due to green roof's cooling effect, and limiting sun radiation transfer through the roof there will be less heat radiation from the ceiling and air-conditioning will be minimized which will have positive comfortability feel and increased productivity for workers as well as more comfortable feel for the customer. See Annexe 1: Urbanscape Green Roof Performance Evaluation Tool.	1 credit
Hea 05a/b (Acoustic performance) 	To insure the building's acoustic performance, including internal sound insulation, meets the appropriate standards for its purpose.	Systems mitigate indoor ambient noise originating from the roofs (i.e.: rain and hail). See Annexe 2: Airborn Sound Insulation for Urbanscape Green Roof Systems.	1 credit






¹Technical manual : SD 5075 – 1.0:2013

² <http://bimetica.com/en/urbanscape.html>

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Ene 01 (Energy efficiency all buildings) 	To encourage buildings that minimise their operational energy consumption through good design.	Systems help reducing the 3 parameters: operational energy demand, primary energy consumption and CO ₂ emissions by keeping appropriate temperature through the summer season. See Annexe 1: Urbanscape Green Roof Performance Evaluation Tool.	15 credits
Ene 05 (Energy efficiency cold storage) 	To encourage the installation of energy efficient refrigeration systems. High levels of insulation can minimise heat loads.	Products help reducing The Total Equivalent Warming Impact (TEWI) through roof insulation efficiency in the design options. See Annexe 1: Urbanscape Green Roof Performance Evaluation Tool.	3 credits
Wat 04 (Water efficient equipment) 	To reduce water consumption by encouraging specification of water efficient equipment	External soft landscaping and planting relies solely on precipitation, during all seasons of the year. See Annexe 1: Urbanscape Green Roof Performance Evaluation Tool.	1 credit
Mat 04 (Insulation all buildings) 	At least 80% (by volume) of the thermal insulation used in the assessed building elements must be responsibly sourced	Recycled content of stone mineral wool (internal and external waste) is 52% and comply with tier 6.	1 credit
Wst 01 (Construction waste management) 	To promote resource efficiency via the effective and appropriate management of construction waste	Packaging's (wood pallet and plastics foils) and products at end of life are recyclable.	3 credits

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<p>LE 04 (Enhancing site ecology)</p> 	<p>To recognize and encourage actions taken to maintain and enhance the ecological value of the site as a result of development</p>	<p>Urbanscape can enhance biodiversity of the site with the 15 species of sedum applied for the green roof. Sedum flowers will attract insects.</p>	<p>3 credits</p>
<p>PoI 03 (Surface water run-off)</p> 	<p>To avoid, reduce and delay the discharge of rainfall to public sewers and watercourses, minimizing the risk of flooding</p>	<p>Urbanscape products are a source control system that helps reducing peak rate of run-off from the site. See Annexe 1: Urbanscape Green Roof Performance Evaluation Tool.</p>	<p>5 credits</p>
<p>PoI 05 (Noise attenuation)</p> 	<p>To reduce the likelihood of noise, arising from fixed installations on the new development, affecting nearby noise-sensitive buildings.</p>	<p>Noise attenuation originating from rainfall/hail on the roofs that could disturb neighbours. See Annexe 2: Airborn Sound Insulation for Urbanscape Green Roof Systems.</p>	<p>1 credit</p>

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Annexe 1: Urbanscape Green Roof Performance Evaluation Tool.

Roof construction

Composition: Concrete (2000); d = 18 cm
 KI vapour barrier LDS 100; d = 0,1 cm
 Rock mineral wool (160); d = 12 cm
 Bitumen - felt/sheet; d = 0,8 cm

U = 0,281 W/m²K
 roof colour: very dark; $\alpha_s = 0,85$

URBANSCAPE

Composition: Sedum-mix blanket
 no additional soil layer
 GreenRoll 4 cm
 Drainage system without buffer


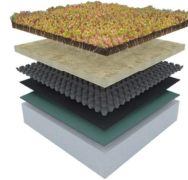
Thickness: 7 cm (without Sedum-mix plants height)

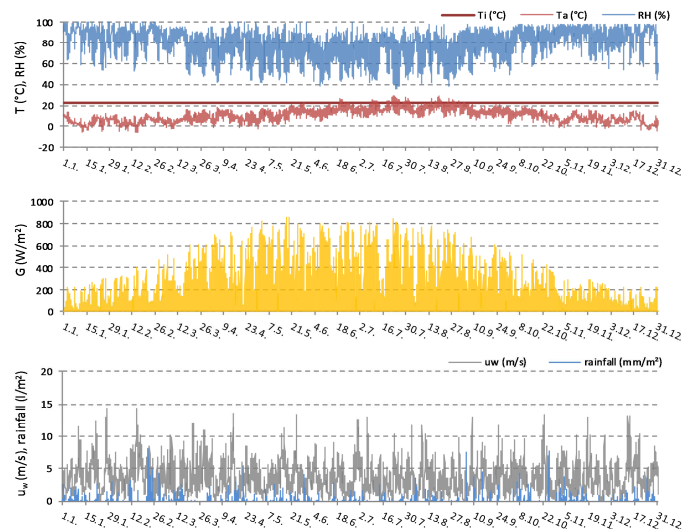
Max.water content: 37 l/m²
 Irrigation: NO

Meteo data

Location: London, United Kingdom

	Ta (°C)	RH (%)	H (kWh/m ² d)	rainfall (l/m ² m)
jan	4,5	86	0,7	52
feb	4,6	85	1,2	64
mar	6,9	79	2,2	43
apr	8,5	76	3,4	46
may	12,2	72	4,5	40
jun	15,5	69	4,9	25
jul	18,0	70	4,6	22
aug	17,9	71	4,0	34
sep	14,6	78	2,9	60
oct	11,0	83	1,7	62
nov	7,0	87	0,9	41
dec	5,4	84	0,5	44
Year	10,6	78	958 kWh/m²	533 l/m²

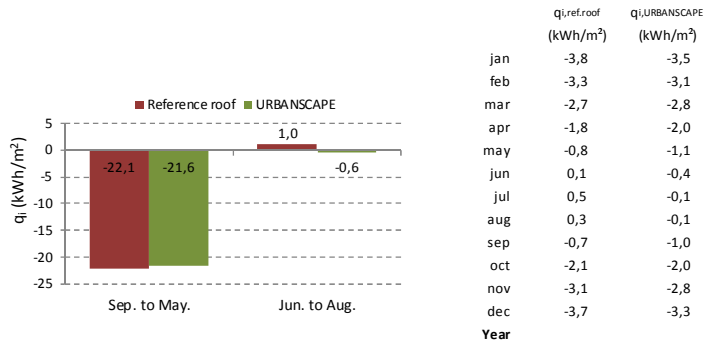


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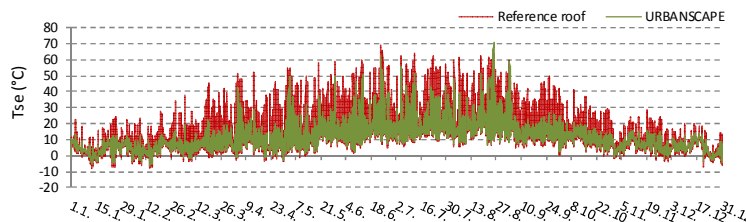
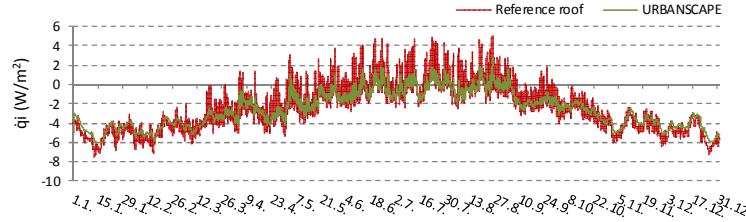
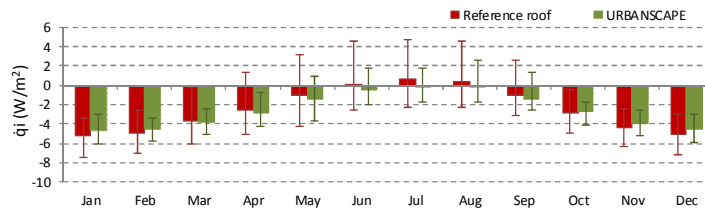
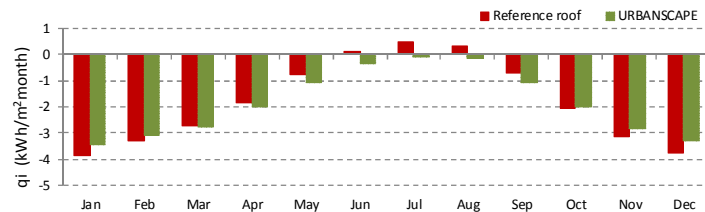
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URBANSCAPE GREEN ROOF SYSTEMS

Results - energy

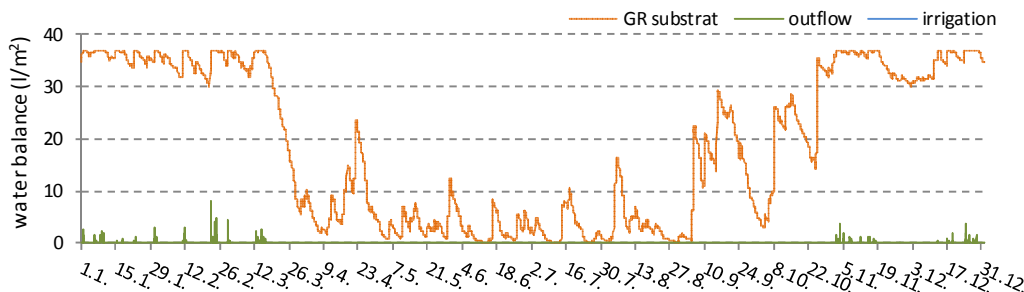
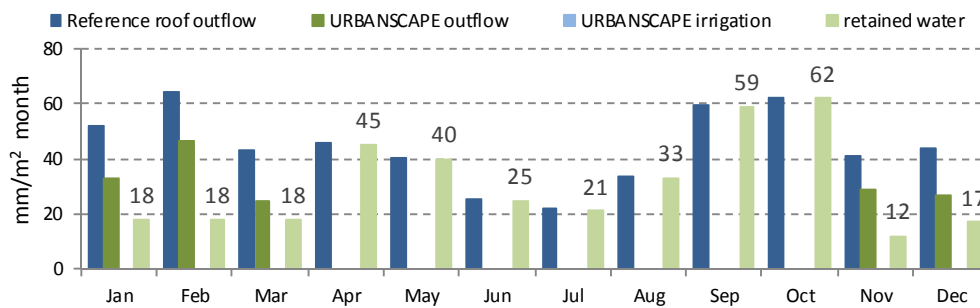
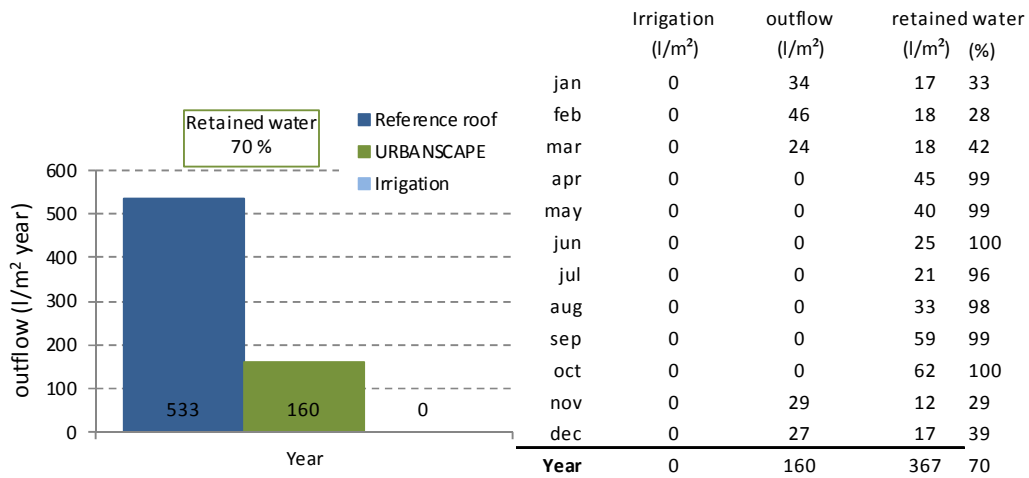


	qi,ref.roof (kWh/m²)	qi,URBANSCAPE (kWh/m²)
jan	-3,8	-3,5
feb	-3,3	-3,1
mar	-2,7	-2,8
apr	-1,8	-2,0
may	-0,8	-1,1
jun	0,1	-0,4
jul	0,5	-0,1
aug	0,3	-0,1
sep	-0,7	-1,0
oct	-2,1	-2,0
nov	-3,1	-2,8
dec	-3,7	-3,3



BREEAM INTERNATIONAL NEW CONSTRUCTION PRODUCT DATA FOR CERTIFICATION URBANSCAPE GREEN ROOF SYSTEMS

Results - water



BREEAM INTERNATIONAL NEW CONSTRUCTION PRODUCT DATA FOR CERTIFICATION URBANSCAPE GREEN ROOF SYSTEMS

Annexe 2: Airborne sound insulation for Urbanscape Green Roof Systems

Evidence of Performance Airborne sound insulation of flat roofs

Test Report
No. 15-002251-PR01
(PB X01-F01-04-en-01)



Client Knauf Insulation, D.O.O.
Trata 32
4220 Skofja Loka
Slovenia

Basis
EN ISO 10140-1: 2010
+A1: 2012 + A2:2014
EN ISO 10140-2 : 2010
EN ISO 717-1 : 2013
15-002251-PR01 (PB X01-F01-04-en-01) dated 18th of October 2015

Product	Flat roof as green roof
Designation	Urbanscape Green Roof
Cover	20 – 40 mm Vegetation mat, m' = 23.0 kg/m ² 40 mm Green roof substrate of mineral wool fibre, m' = 4.9 kg/m ²
Insulation	
2 nd separation layer	12.5 mm Drainage system, m' = 0.72 kg/m ²
1 st separation layer	0.5 mm LD PE- film, m' = 0.5 kg/m ²
Vapour barrier	2.5 mm EPDM, m' = 3.4 kg/m ²
Supporting construction	160 mm Reinforced concrete floor, m' = 400 kg/m ²



Instructions for use
This test report serves to demonstrate the sound insulation of a flat roof. As set out by the German Bauregelleiste (Construction Products List), evidence of compliance in Germany is possible only in the form of an AbP (national technical test certificate). This test report cannot be used as a substitute to be included in a national technical test certificate (AbP).

Validity
The data and results given relate solely to the tested and described specimen. Testing the sound insulation does not allow any statement to be made on further characteristics of the present construction regarding performance and quality.

Notes on publication
The ift Guidance Sheet "Conditions and Guidance for the Use of Ift Test Documents" applies. The cover sheet can be used as abstract.

Overall dimensions	5,000 mm × 5,270 mm
Total thickness	236 – 256 mm
Area related mass	432.5 kg/m ²
Result	Weighted sound reduction index R_w Spectrum adaptation terms C and C_{tr}



$$R_w (C; C_{tr}) = 57 (-3; -8) \text{ dB}$$

ift Rosenheim
16.10.2015

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S. Bacher
S Stefan Bacher, Dipl.-Ing. (FH)
Operating Testing Officer
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Contents
The test report contains a total of 9 pages
1 Object
2 Procedure
3 Detailed results
4 Instructions for use
Data sheet (1 page)

Verf.-ID: 08/446 / 01.1325/4

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BREEM INTERNATIONAL NEW CONSTRUCTION PRODUCT DATA FOR CERTIFICATION URBANSCAPE GREEN ROOF SYSTEMS

Evidence of Performance Airborne sound insulation of flat roofs

Test Report
No. 15-002251-PR01
(PB X03-F01-04-en-01)

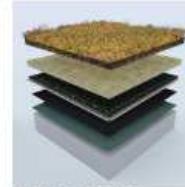


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1 st separation layer	0.5 mm LD PE-film, m' = 0.5 kg/m ²
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Representation



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Data sheet (1 page)

Overall dimensions	5,000 mm × 5,270 mm
Total thickness	216 – 236 mm
Area related mass	429,9 kg/m ²
Result	Weighted sound reduction index R_w Spectrum adaptation terms C and C_{tr}



$$R_w (C; C_{tr}) = 55 (-3; -7) \text{ dB}$$

ift Rosenheim
16.10.2015

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